

REMARKS

This Application has been carefully reviewed in light of the Office Action mailed November 3, 2004. Claims 1-26 are pending in the Application. For the reasons given below, Applicants submit that the pending claims are patentably distinguishable over the cited references. Applicants, therefore, respectfully request reconsideration and favorable action in this case.

Claims 1-6, 8-9, 11-18, 20-21, and 23-24 Are Allowable

The Examiner rejects Claims 1-6, 8-9, 11-18, 20-21, and 23-24 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,310,709 issued to Bergano (“*Bergano '709*”) in view of U.S. Patent No. 6,417,958 issued to Du et al. (“*Du*”).

In order to establish a *prima facie* case of obviousness, three requirements must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge available to one skilled in the art, to modify a reference or combine multiple references; (2) there must be a reasonable expectation of success; and (3) the prior art reference (or combination of references) must teach or suggest all of the claim limitations. M.P.E.P. § 2143. In the present case, a *prima facie* case of obviousness cannot be maintained for at least two reasons. Neither *Bergano '709* nor *Du* provides a suggestion or motivation to combine the references. Furthermore, even assuming for the sake of argument that the references did suggest or motivate a combination of the references to a person of ordinary skill in the art at the time of the invention, *Bergano '709* and *Du*, whether considered singly, in combination with one another, or in combination with information generally available to those of ordinary skill in the art at the time of the invention, still fail to disclose all of the elements of the pending claims.

The References Do Not Disclose Each and Every Limitation of the Claims

First, *Bergano '709* and *Du* do not disclose each and every limitation of any of the rejected claims. For example, independent Claim 1 recites “modulating a non-intensity characteristic of an optical carrier signal with a data signal to generate an optical information signal.” Independent Claims 13 and 23 recite similar, although not identical, limitations. In

the Office Action, the Examiner argues that this limitation is disclosed in *Bergano '709* (elements 102 and/or 108 of Figure 1). However, Applicants respectfully submit that this is not the case. Element 102 of Figure 1 is a data modulator that “that modulates the signal to impart information in a *conventional* manner to produce a modulated optical information signal 103.” *Column 2, lines 28-32* (emphasis added). It also discloses that the data modulator “modulates the optical signal 101 at a frequency determined by a clock 106 via a clock signal on line 117.” *Column 2, lines 34-36*. The Examiner should note that this does not mean that frequency modulation is used, as implied in the Examiner’s rejection of Claims 7, 19, and 25 in light of a similar statement in U.S. Patent No. 6,556,326 issued to Bergano. In fact, this statement indicates that the signal is not frequency modulated. Furthermore, *Bergano '709* suggests that the “conventional” technique used by the data modulator to modulate the data onto the signal is intensity modulation.¹ *See Column 2, line 60 – Column 3, line 1*. In any case, *Bergano '709* certainly does not specifically disclose that data modulator modulates the data onto the signal using non-intensity modulation, as required by Claims 1, 13, and 23.

Furthermore, although element 108 is a phase modulator that modulates a non-intensity characteristic of a signal, the disclosed phase modulator does *not* modulate a carrier signal with a *data signal*, as required by the claims. As described above, it is the data modulator 102 that modulates an optical signal 100 with a data signal 116. Instead, the phase modulator “modulates the phase of the optical carrier (i.e., optical signal 101) onto which the data signal has been modulated.” *Column 2, lines 37-40*. In other words, the phase modulator “receives an optical signal into which data has been modulated at a predetermined frequency.” *Abstract*. Therefore, the phase modulator disclosed in *Bergano '709* does not modulate a carrier signal with a *data signal*, as required by the claims. Instead, it further modulates a signal that already has the data modulated onto it.

Therefore, *Bergano '709* does not disclose “modulating a non-intensity characteristic of an optical carrier signal with a data signal to generate an optical information signal,” as recited in Claim 1, and as similarly recited in Claims 13 and 23. Furthermore, as the

¹ The reference indicates that the electrical field of the optical signal upon which the phase modulator 108 acts (the signal onto which data modulator 102 has modulated the data) is a function of the intensity modulation.

Examiner recognizes, *Du* also does not disclose this limitation. Therefore, for at least this reason, the *Du-Bergano* '709 combination does not disclose each and every limitation of any of the rejected claims.

There Is No Suggestion or Motivation to Combine the References

Second, there is no suggestion or motivation to combine *Du* and *Bergano* '709. The question raised under 35 U.S.C. § 103 is whether the prior art taken as a whole would suggest the claimed invention taken as a whole to one of ordinary skill in the art at the time of the invention. *See* 35 U.S.C. § 103(a) (2000). Accordingly, even if all elements of a claim are disclosed in various prior art references, which is certainly not the case here as discussed above, the claimed invention taken as a whole cannot be said to be obvious without some reason given in the prior art why one of ordinary skill at the time of the invention would have been prompted to modify the teachings of a reference or combine the teachings of multiple references to arrive at the claimed invention.

The M.P.E.P. sets forth the strict legal standard for establishing a *prima facie* case of obviousness based on modification or combination of prior art references:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references where combined) must teach or suggest all the claim limitations.

M.P.E.P. chs. 2142-43 (Rev. 2, May 2004). “To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All words in a claim must be considered in judging the patentability of that claim against the prior art.” M.P.E.P. ch. 2143.03 (Rev. 2, May 2004) (citations omitted).

In addition, the M.P.E.P. and the Federal Circuit repeatedly warn against using an applicant’s disclosure as a blueprint to reconstruct the claimed invention. For example, the M.P.E.P. states, “The tendency to resort to ‘hindsight’ based upon applicant’s disclosure is often difficult to avoid due to the very nature of the examination process. However,

impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.” M.P.E.P. ch. 2142 (Rev. 2, May 2004). The governing Federal Circuit cases are equally clear.

A critical step in analyzing the patentability of claims pursuant to [35 U.S.C. § 103] is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. . . . Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one “to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher.”

In re Kotzab, 217 F.3d 1365, 1369, 55 U.S.P.Q.2d 1313, 1316 (Fed. Cir. 2000) (citations omitted).

The Examiner argues that this suggestion to combine stems from the fact that *Du* indicates that a “co-propagating amplifier reduces cross-talk.” However, *Du* actually discloses that a co-propagating Raman amplifier *increases* cross-talk. *Column 1, lines 21-32*. The invention of *Du* is thus directed at a way of reducing this cross-talk when using a co-propagating Raman amplifier. However, there is no disclosure or suggestion in *Du* that modulating a non-intensity characteristic of an optical signal with a data signal reduces cross-talk. Applicants refer the Examiner to Column 3, lines 49-64, which summarizes the ways that *Du* proposes to reduce such cross-talk (also see Figures 11-13 and the accompanying description for a detailed discussion of the proposed techniques). None of these proposed techniques relates to modulating a non-intensity characteristic of an optical signal, and there is no disclosure or suggestion in *Du* that a non-intensity modulated signal provides any advantages when using a co-propagating Raman amplifier. Therefore, even if *Bergano '709* disclosed modulating a non-intensity characteristic of an optical signal with a data signal (which it does not, as discussed above), there is no suggestion or motivation to combine a non-intensity modulated signal with *Du*’s disclosure of the use of a co-propagating Raman amplifier. In fact, *Du* teaches away from the use of a co-propagating Raman amplifier except when using those systems specifically disclosed in *Du* (which do not modulate a non-intensity characteristic of an optical signal) since these are the only situations in which *Du*

recognizes that the cross-talk created by a co-propagating Raman amplifier is sufficiently reduced.

Therefore, because neither *Du* nor *Bergano* '709 disclose each and every limitation of Claims 1, 13, or 23 and because there is no suggestion or motivation to combine the teachings of *Du* and *Bergano* '709, Applicants respectfully submit that Claims 1, 13, and 23 are in condition for allowance. Furthermore, the claims that depend from these allowable independent claims (including Claims 2-6, 8-9, 11-12, 14-18, 20-21, and 24) are also in condition for allowance. Therefore, reconsideration and favorable action are respectfully requested.

Claims 7, 10, 19, 22 and 25 Are Allowable

The Examiner also rejects Claims 7, 10, 19, 22, and 25 under 35 U.S.C. § 103(a) as being unpatentable over *Bergano* '709 in view of *Du* and further in view of U.S. Patent No. 6,556,326 issued to *Bergano* ("*Bergano* '326").

Claims 7, 19, and 25 recite that the non-intensity characteristic of the optical carrier signal that is modulated with a data signal is the frequency of the optical carrier signal. The Examiner argues that this limitation is disclosed at Column 5, lines 39-45 of *Bergano* '326, which states the following:

The data modulator 402 receives the data to be imparted to the optical signal 401 from a data source 404 and modulates the optical signal 401 at a frequency determined by a clock 405. The optical information signal 403 is transmitted from the data modulator 402 to optical phase modulator 406, amplitude modulator 407, and finally to polarization modulator 413.

As mentioned above, the fact that a signal is modulated *at a frequency* indicates that it is not the frequency that is being modulated. Furthermore, Applicants note that a similar statement is made about data modulator 102 of Figure 1 in *Bergano* '326, which appears to be very similar or identical to data modulator 402.² Column 3, lines 14-21. Regarding data modulator 102, *Bergano* '326 goes on to state that the optical information signal transmitted

² The data modulators of *Bergano* '326 also appear to be very similar or identical to the data modulators disclosed in *Bergano* '709.

from data modulator 102 “is transmitted to an amplitude modulator 107 which places *additional intensity modulation* on the optical information signal 103.” This clearly suggests that the data modulator is performing intensity modulation (as argued above with reference to *Bergano* ‘709), not frequency modulation. Therefore, in addition to depending from an allowable independent claim, Claims 7, 19, and 25 are also allowable since none of the cited references disclose modulating the frequency of an optical carrier signal with a data signal. Accordingly, Applicants respectfully request reconsideration and allowance of these claims.

Claims 10 and 22 are also allowable since they require, through their dependence on their respective independent claim, modulating a non-intensity characteristic of an optical carrier signal with a data signal. Although, *Bergano* ‘326 discloses re-modulating an optical signal with an amplitude modulator, the modulated optical signal received by this amplitude modulator (signal 103 in Figure 1 of *Bergano* ‘326) is *not* a signal having a non-intensity characteristic modulated with a data signal. Accordingly, Applicants respectfully request reconsideration and allowance of these claims.

Claim 26 Is Allowable

The Examiner also rejects Claim 26 under 35 U.S.C. § 103(a) as being unpatentable over *Du* in view of *Bergano* ‘326.

Independent Claim 26 recites “modulating one of a phase and frequency of each of a plurality of wavelength distinct carrier signals with a data signal to generate an optical information signal.” As mentioned above, the disclosure of the data modulator in *Bergano* ‘326 is very similar to the disclosure of the data modulator in *Bergano* ‘709. Therefore, for the same reasons given above with respect to the rejection of Claims 1, 13, and 23 using *Bergano* ‘709, *Bergano* ‘326 also does not disclose modulating a non-intensity characteristic (and specifically, either the phase or frequency) of a carrier signal (or of each of a plurality of wavelength distinct carrier signals) with a data signal. Furthermore, for the same reasons given above with respect to the combination of *Bergano* ‘709 and *Du*, there is also no suggestion or motivation to combine *Bergano* ‘326 and *Du*. Accordingly, Applicants respectfully request reconsideration and allowance of Claim 26.

CONCLUSION

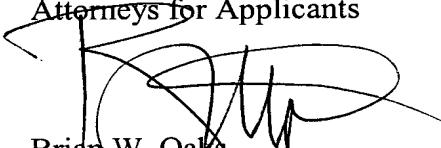
Applicants have made an earnest attempt to place this case in condition for allowance. For at least the foregoing reasons, Applicants respectfully request full allowance of all the pending claims.

If the present application is not allowed and/or if one or more of the rejections is maintained, Applicants hereby request a telephone conference with the Examiner and further requests that the Examiner contact the undersigned attorney to schedule the telephone conference.

Applicants believe no fees are due, however, the Commissioner is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 02-0384 of BAKER BOTTS L.L.P.

Respectfully submitted,

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